

A Finely Crafted O'Brien Unit 2 *PRACTICE* Test

Calculator Section: You may use a calculator. Use a pencil. Show all work and circle your answer. When you finish, put away your calculator and you can come up to get the non-calculator part—you may continue to work on both sections without your calculator.

1. Evaluate each expression.

a. $|6.8|$

6.8

b. $|8 - 10| = |-2|$

2

c. What is the definition of the absolute value of a number?

Distance from zero on a number line.

2. Give an example of a number that is:

a. real but not rational

π or $\sqrt{2}$ or $0.10110111...$
etc.

b. rational but not an integer

$\frac{1}{3}$ or 0.5
etc.

c. an integer but not a whole number

-3 etc.

d. a whole number but not a natural number

0

3. a. Write the reciprocal of 7.

$\frac{1}{7}$

b. Write the opposite of $\frac{2}{3}$.

$-\frac{2}{3}$

c. Is $-x$ always less than x ? Justify your response.

No! If x is negative, then $-x$ is positive. Positives are more than negatives.

4. An example of the commutative property of addition is $3 + 4 = 4 + 3$. Give an example of:

a. the commutative property of multiplication

$3 \cdot 4 = 4 \cdot 3$

b. the associative property of addition

$2 + (3 + 4) = (2 + 3) + 4$

c. the distributive property

$2(5 + 6) = 2 \cdot 5 + 2 \cdot 6$

5. Find the distance between $\frac{4}{5}$ and $-5\frac{3}{5}$ on a number line.

$$\frac{4}{5} - \left(-5\frac{3}{5}\right) = \frac{4}{5} + 5\frac{3}{5} = 5\frac{7}{5} = \boxed{6\frac{2}{5}}$$

6. Evaluate and simplify

a. $6x + 7x + 5$

$$\boxed{13x + 5}$$

b. $(3x - 5) + (9 - 7x)$

$$3x - 5 + 9 - 7x$$

$$\boxed{-4x + 4}$$

c. $(x + 3y) - (6x - 2y)$

$$x + 3y - 6x + 2y$$

$$\boxed{-5x + 5y}$$

d. $-5x - (3x - 8)$

$$-5x - 3x + 8$$

$$\boxed{-8x + 8}$$

7. Simplify.

a. $3 \cdot 4m$

$$\boxed{12m}$$

b. $5(3x + 4)$

$$\boxed{15x + 20}$$

c. $\frac{8x - 16}{4} =$

$$\boxed{2x - 4}$$

d. $2(3j - 5k) - 4(j + 2k)$

$$6j - 10k - 4j - 8k$$

$$\boxed{2j - 18k}$$

8. If $a = -3$, $b = 8$, $c = -2$, and $d = -7$, evaluate.

a. $a - b$

$$-3 - 8$$

$$= -3 + -8$$

$$= \boxed{-11}$$

b. $a + (-b) + c + (-d)$

$$-3 + (-8) + (-2) + 7$$

$$\boxed{-6}$$

9. Open up your laptop and follow the link from your laptop. Write the number correct here.

You can re-do these until you get 100% (practice test only!)
 _____ correct out of 16

10. Open up your laptop and follow the link from your laptop. Write the number correct here.

_____ correct out of 8

11. Open up your laptop and follow the link from your laptop. Write the number correct here.

_____ correct out of 8

12. Evaluate each expression. Show as much work as necessary.

a.
$$\frac{12 + 4 + 3 \cdot 2}{3^2}$$

$$= \frac{3 + 6}{9}$$

$$= \frac{9}{9} = \textcircled{1}$$

b.
$$|8 - 2(3^2 - 6)|$$

$$= 8 - 2(9 - 6)$$

$$= 8 - 2(3)$$

$$= 8 - 6$$

$$= \textcircled{2}$$

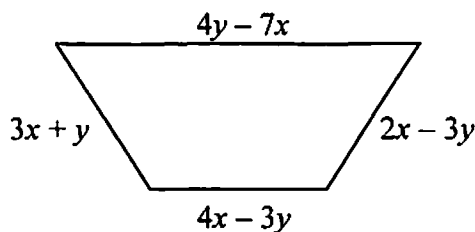
13. Find 4 integers whose sum is greater than zero and whose product is less than zero.

example: 1, 2, 3, -1

$$1 + 2 + 3 + (-1) = 5 \checkmark$$

$$(1)(2)(3)(-1) = -6 \checkmark$$

14. Give an expression in simplified form for the perimeter of the trapezoid shown below.



$$4y - 7x + 2x - 3y + 4x - 3y + 3x + y$$

$$\textcircled{2x - y}$$

15. Sometimes two algebraic expressions that look similar can have very different meanings. Take, for example, $5 - (2c + 8)$ and $-5(2c + 8)$.

a. Simplify $5 - (2c + 8)$.

$$5 - 2c - 8$$

$$\boxed{-2c - 3}$$

b. Simplify $-5(2c + 8)$.

$$\boxed{-10c - 40}$$

16. Miss Take needs to simplify $8 - 2(x - 3)$. Her working is shown at right.

a. Find the value of $8 - 2(x - 3)$ when $x = 5$.

$$\begin{aligned} &8 - 2(5 - 3) \\ &= 8 - 2(2) \\ &= 8 - 4 = \boxed{4} \end{aligned}$$

b. Find the value of $6x - 18$ when $x = 5$.

$$\begin{aligned} &6(5) - 18 \\ &= 30 - 18 \\ &= \boxed{12} \end{aligned}$$

c. How do parts a. and b. show that Miss Take simplified $8 - 2(x - 3)$ incorrectly?

The answers are different!

d. What is the correct simplification of $8 - 2(x - 3)$?

$$8 - 2x + 6$$

$$\boxed{-2x + 14}$$

$\begin{aligned} &8 - 2(x - 3) \\ &= 6(x - 3) \\ &= 6x - 18 \end{aligned}$
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Bonus: Is it possible to select distinct integers x , y , and z so that $x \cdot y = y$ and $x + z = x$? Why or why not?

Good question! You'll see this question on the test...